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Translation

PATENT COOPERATION TREATY



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/RU2003/000503	International filing date (day/month/year) 19 November 2003 (19.11.2003)	Priority date (day/month/year) 21 November 2002 (21.11.2002)
International Patent Classification (IPC) or national classification and IPC F03G 7/06		
Applicant	UMAROV, Georgy Ramasanovich	

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

I Basis of the report
II Priority
III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV Lack of unity of invention
V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI Certain documents cited
VII Certain defects in the international application
VIII Certain observations on the international application

Date of submission of the demand 17 June 2004 (17.06.2004)	Date of completion of this report 11 March 2005 (11.03.2005)
Name and mailing address of the IPEA/RU	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

I. Basis of the report

1. With regard to the elements of the international application:^{*} the international application as originally filed the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19)

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages _____ the claims, Nos. _____ the drawings, sheets/fig _____5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).^{**}

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 3	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 3	YES
	Claims		NO
Industrial applicability (IA)	Claims		YES
	Claims	1 - 3	NO

2. Citations and explanations

Reference is made to the following documents cited in the search report:

- D1: US 3940298 A
- D2: US 4348765 A
- D3: RU 2162161 C2
- D4: RU 2078253 C1
- D5: US 4756158 A

Document D1 describes a thermal laser, whose pumping principle is based on fuel combustion products being passed through an ultrasonic nozzle.

Document D2 discloses a thermionic laser, whose operation is based on the fact that electrons are sent from an emitter to a collector by heating.

Document D3 sets out a method for converting thermal energy into mechanical work by interaction of a working medium with an external energy source.

D4 describes a method for converting the thermal energy of an external source of energy into mechanical work, which includes heating a working medium and expansion thereof, with production of mechanical work.

Document D5 describes a method for converting thermal energy into mechanical energy by heating a metal alloy to a specific temperature.

The claimed method for converting thermal energy to useful work differs from the known methods in that a working medium interacts with a low temperature energy source, Dirac's matter in the positron state being used as said source, and this interaction is performed by putting the working medium into quantum-mechanical resonance therewith. Additional energy in the form of heat is generated as a result of annihilating the positron with substratum resulting from Dirac's matter in the positron state.

Therefore, the claimed invention meets the requirements of novelty and inventive step. However, there are a number of issues regarding the industrial applicability of the disclosed invention.

It is known that a positron can form as a result of the collision of photons with charged particles, and also in the event of collisions between two charged particles having sufficient energy (i.e. at least 1.02 MeV). As a positron cannot exist on earth for long due to the presence of a great abundance of free electrons (lifetime 5×10^{-11} s), an antiparticle formed collides with a particle during the process of annihilation. In doing so, they are transformed into other particles. In the absence of other particles during annihilation of one positron and one electron two quanta are generated, flying in opposite directions. Thus, as a result of the annihilation process a source can be produced emitting waves of the following length. According to Einstein's law $2hv = 2m_0c^2$, therefore $v = m_0c^2 / h$. As the length of wave λ is related to the wavelength $\lambda = c/v$, we obtain the following: $\lambda = 2 \times 10^{-12}$ m. The wavelength produced is the wavelength of shortwave electromagnetic gamma radiation. It is known from the prior art that one of the methods for producing monochromatic beams of high-energy γ -quanta is based on this property of the annihilation process. The applicant

has indicated that the claimed invention can be applied industrially for heating. Indeed, radiation is used in industry for drying and heating. However, for these purposes powerful sources of infra-red radiation are used, as it is specifically this radiation that is characterised by heat properties.

Moreover, it is known that in laboratory conditions antiparticles are generated in the interactions of particles on accelerators. Antiparticles are kept in storage rings (see Fizicheskii entsiklopedicheskii slovar, Moscow, "BOLSHAYA ROSSIISKAYA ENTSIKLOPEDIYA", Moscow 1995, pages 23-24, 227 /1/; Fizicheskaya entsiklopediya, Moscow "BOLSHAYA ROSSIISKAYA ENTSIKLOPEDIYA", Moscow, 1994, volume 4, pages 398, 399 /2/). In such devices, antiparticles are stored in a state of motion at a speed close to the speed of light, inside large ring-shaped vacuum chambers. The radius of these rings is measured in tens and hundreds of metres, and the overall number of antiparticles circulating therein is very small. The application does not contain information concerning devices generating antiparticles.

It should be noted that in order for any reaction to be used in nuclear-power engineering the following conditions must be observed (see Shirokov Yu. M. Yadernaya fizika, Moscow, Nauka, 1972, pages 511 /3/): (1) the starting materials for the reaction must be available in sufficient quantities; (2) it must be possible to produce the reaction on a macroscopic scale.

The above casts doubt on the possibility of generating heat from the annihilation process on a macroscopic scale. Therefore the claimed invention cannot be recognised as industrially applicable.

The examiner draws the applicant's attention to the fact that, according to PCT Article 33(1), the aim of the international preliminary examination is to formulate a

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preliminary and non-binding opinion. Any Contracting State may apply additional or different criteria for the purpose of deciding whether, in that State, the claimed invention is patentable or not (see PCT Article 33(5)).